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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/518,895	03/06/2000	Kalyan Handique	UM-04228	8654

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MEDLEN & CARROLL, LLP
101 HOWARD STREET
SUITE 350
SAN FRANCISCO, CA 94105

EXAMINER	
LUDLOW, JAN M	

ART UNIT	PAPER NUMBER
1743	8

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No. 09/518,895	Applicant(s) HANDIQUE ET AL	
	Examiner Jan M. Ludlow	Art Unit 1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for R ply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-13 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 6, 10, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ekstrom et al (5376252).

Ekstrom teaches a microfluidic device including a microchannel made from a glass substrate (col. 3, line 62) and a hydrophobic spacer (col. 4, line 29) and including a liquid inlet (col. 7, lines 16-18). Note that there are no structural features claimed defining a microdroplet channel over any other microfluidic channel.

3. Claims 1, 6, 10, 12-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Wilding (5637469).

Wilding teaches a small scale channel device made from, e.g., etched silicon and having a channel inlet (col. 7, lines 1 and 19 and 31). The channels may be 2-500 um wide and 0.1-500 um deep (col. 7, lines 65-66), which range overlaps the instantly

claimed range. A hydrophobic coating is disclosed for coating the inside of the channel (col. 9, line 31). Port 16C is used as a vent (col. 14, line 35). Note that there are no structural features claimed defining a microdroplet channel over any other microfluidic channel.

4. Claims 2-5, 7-9, 11, 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Anderson et al (5922591).

Note that claims 2-5, 7-9, 11, 13 have an effective filing date of 9/26/1997, whereas claims 1, 6, 10 and 12 have an effective filing date of 9/15/1995.

Anderson teaches a microfluidic device made by, e.g., etching a silicon or glass substrate (col. 18, lines 60-62). Channels are typically 10 to 1000 um wide and 1 to 500 um deep, which range overlaps the claimed range (col. 18, lines 39-40). A porous hydrophobic portion is provided in a channel intermediate an inlet and a vent to provide debubbling (col. 30, lines 1-25, figure 12B). Positive pressure may be applied to the inlet (e.g., col. 30, lines 43-44) and pressure is exemplified by gas pressure (col. 27, lines 23-24). Any volume holding the pressurizing gas constitutes the instant air chamber. Note that there are no structural features claimed defining a microdroplet channel over any other microfluidic channel.

5. Claims 2-5, 7-9, 11, 13 are rejected under 35 U.S.C. 103 as being obvious over Mian et al (6319469).

Note that claims 2-5, 7-9, 11, 13 have an effective filing date of 9/26/1997, whereas claims 1, 6, 10 and 12 have an effective filing date of 9/15/1995.

Mian teaches a microfluidic device made from, e.g., etched glass or silicon (col. 4, lines 9-15). Air inlets, outlets (instant vents) and holding chambers are provided in the channels to direct movement of the fluid (col. 8, lines 54-end). Microchannel sizes may be form 0.1 um to close to 1mm (col. 8, line 38). Hydrophobic portions may be provided to bind cells or other reagents (col. 14, line 45 to col. 15, line15).

It would have been obvious to provide a hydrophobic region in the channels of Mian in order to bind desired reagents as taught at a position between the inlet and outlet for passing fluid over the reagents using pressure differentials as taught. It would have been obvious to make the channels of the claimed width in order to be proportionate to the depth disclosed. Note that there are no structural features claimed defining a microdroplet channel over any other microfluidic channel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jan M. Ludlow whose telephone number is (703) 308-4039. The examiner can normally be reached on Monday-Thursday, 11:30 am - 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Jan M. Ludlow
Primary Examiner
Art Unit 1743

jml
December 2, 2002